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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,982	12/13/2004	Eduardo Trifoni	267.184	1934

22852 7590 12/08/2008

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EXAMINER	
WANG, EUGENIA	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
12/08/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/517,982	TRIFONI ET AL.	
	Examiner	Art Unit	
	EUGENIA WANG	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22,24 and 27* is/are rejected.

7)☐ Claim(s) *1-27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/25/08*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the amendment received September 25, 2008:

a. Claims 1-27 are pending.

b. Priority has been perfected with the submission of the certified English translation of the foreign priority document.

c. The claim objection with respect to claims 6 and 8 have been withdrawn in light of the amendment. The previous objection to claim 12 is maintained, as no correction has been made to claim 12.

d. Portions of the previous rejections of record have been maintained. However a new prior art piece has been added to obviate the claimed invention, as necessitated by the amendment. It is noted that US 2003/0039875 (Horiguchi et al.) has been withdrawn as a prior art piece with the perfection of priority.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 25, 2008 has been entered.

Information Disclosure Statement

3. The information disclosure statement filed September 25 has been placed in the application file and the information referred to therein has been considered as to the merits. (It is noted that only the English equivalent of French Document XP-D000969027 has been considered. The only other translation submitted with the amendment was the translation of the foreign priority document. However, it is unsure if this is the same document as the Italian Research Disclosure cited on the Information Disclosure Statement. Examiner invites Applicant to either clarify the record or to provide the translation of the Italian Research Disclosure.)

Claim Objections

4. Claims 1-27 is objected to because of the following informalities: Claim 1 recites the grammatical error in the phrase reading “network ... that electrically connecting” (lines 14-15), wherein is should read ‘network ... that electrically connects’. Since claims 2-27 are dependent on claim 1, they are objected to for the same reason. Appropriate correction is required.

5. Claims 12 and 13 are objected to because of the following informalities: Claim 12 recites “wherein a side channel ... fluidly connect” (line 2). Since channel is singular, it is submitted that the word ‘connects’ should be used for grammatical correctness. Since claim 13 is dependent on claim 12, it is objected to for the same reason. Appropriate correction is required.

6. Claims 12 and 13 are objected to because of the following informalities: Claim 12 recites “hollow central portion (102a)” (line 3). However, the hollow central portion is

denoted as '(102b)' (as in claim 9). Since claim 13 is dependent on claim 12, it is objected to for the same reason. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 13 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

e. Claim 13 recites the limitation "the adjacent reaction cell" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim. Claim 9 recites that the cooling cell is in between two reaction cells, thus using "the" to describe an adjacent reaction cell does not have proper antecedent basis, as it is indefinite as which separator is being referenced.

f. Claim 15 recites the limitations "said feed openings" and "said perimetrical portion" in lines 2-3 and 5-6, respectively. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1-3, 5-12, 14-21, 24, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 00/63992 (Brambilla et al.).

As to claim 1, Brambilla et al. teach a membrane electrode generator (as depicted in fig. 1) with a multiplicity of reaction cells (the portion of elementary cell depicted by membrane [2], catalysts [4], and porous electrodes [3]) (fig. 1). Each reaction cell has an anodic chamber and cathodic chamber (note: the electrodes [3] and catalysts [4] appear in pairs, wherein one would inherently correspond to the anodic chamber and the other to the cathodic chamber, as such a pair of electrodes is necessary for fuel cell function), a proton exchange membrane [2], wherein gaseous reactants are fed to (to react) (see p 1, lines 10-17; p 8, lines 4-11 and 17-25; p 9, 1-4; fig. 1). Each reaction cell is delimited by a pair of conductive bipolar plates [7], wherein apertures are on bipolar plates [7] and gaskets [6] (p 8, lines 17-19). (Note: Although only the gasket is shown, it is stated that the components are juxtaposed in order to form the according manifolds, and thus the bipolar plates would have the same openings shown as the corresponding gasket (fig. 1, the perforated feed/discharge areas; p 8, lines 17-19). Accordingly the gaskets shown in figs. 5 and 6, with a plurality of fluid injection calibrated holes [15] would necessarily correspond to that of the bipolar plate as well. Water (cooling fluid) is injected into such calibrated holes in a calibrated manner (as the injection corresponds to a suitable flow of water, thus teaching of some sort of calibration) (p 6, lines 22-26; p 7, lines 1-4). It is noted that there is a conductive reticulated element [5] on either side (cathode and anode) of the fuel cell (fig. 1). It is noted that the embodied reticulated element the same as that disclosed in US 5482792 (Faita et al., which is the same reticulated element used by the instant application). Specifically, a deformable metallic material, such as metal foam, is embodied (fig. 8).

(Note: As seen in fig. 8, the metallic foam is shown to be a tridimensional network of wires.) Furthermore, it is noted that the reticulated element [5] electrically connects the bipolar plates [7] to the electrodes [3] and distributes the gaseous reactants (p 8, lines 11-17).

As to claim 2, Brambilla et al. teach that the injected humidification water (cooling fluid) is evaporated inside of the cell in order to provide humidification as well as to remove heat (abs; p 6, lines 22-26; p 7, lines 1-4).

As to claim 3, it is noted that Brambilla et al.'s gasket is being relied upon to show the openings of the corresponding bipolar plates (as set forth in the rejection of claim 1). The gaskets in figs. 5 and 6 have fluid injection calibrated holes [15] corresponding to the reactant feeds (as they are placed in a specified location according to the feed) and to the side openings (also depicted by areas [15]) for feeding the cooling fluid itself (see example 6 (p 17, lines 19-24; p 18, lines 1-3, corresponding to fig. 5 and example 7 (p 18, lines 4-20) corresponding to fig. 6). As seen in figs. 5 and 6, side openings [15] are in a parametrical portion of the plate.

As to claim 5, as seen in Brambilla et al.'s fig. 1, bipolar plates [7] are interposed between two different sealing gaskets [6] (one from the anodic side of one reaction cell and one from the cathodic side of an adjacent cell). Each gasket has a hollow center portion where the conductive reticulated element resides ([14], housing for reticulated element). Feed openings for the reactants (for example embodied by [13] in fig. 5) exist, as do side openings (circular portions of the part labeled [15]) for passage of cooling fluid, and distribution channels (portion that both straight path portions of the

part labeled [15] and opening [13] feed into) (fig. 5). As reticulated element [5] sits in hollow portion [14], the openings as seen in fig. 5 would be it would be fluidly connected to the reticulated element..

As to claim 6, Brambilla et al.'s gasket of fig. 5 can be interpreted in the following manner: the wide base of triangular portion wherein parts [13] and [15] feed to constitute the distribution channels, the circular portion of [15] constitute the side opening, and the straight portion of [15] constitute a fluid collection channel connected to the side openings (circular portion of [15]), wherein the fluid collection channels (straight portion of [15]) are interposed between feed openings [13] and the distribution channel (triangular portion, as the wide base portion near the hollow portion for the reticulated element can be said to be the distribution channel, wherein at least a portion lies below the fluid collection channel (straight part of [15]).

As to claim 7, Brambilla et al.'s gasket of fig. 5 can be interpreted in the following manner: the triangular portion wherein parts [13] and [15] feed to constitute the distribution channels, the circular portion of [15] constitute the side opening, and the straight portion of [15] constitute a fluid collection channel connected to the side openings (circular portion of [15]), wherein the fluid collection channels (straight portion of [15]) is located between feed openings [13] and the distribution channel (triangular portion).

As to claim 8, Brambilla et al.'s fuel cell is one of a filter-press arrangement (p 8, lines 4-5). Furthermore, as previously noted, although only the gasket is shown, it is stated that the components are juxtaposed in order to form the according manifolds,

and thus the bipolar plates would have the same openings shown as the corresponding gasket (fig. 1, the perforated feed/discharge areas; p 8, lines 17-19). Accordingly, the fluid collection channels (straight portion of [15]) is present on a gasket and is superposed to the fluid injection calibrated holes (straight portion of [15], as would be on corresponding bipolar plate). There is some sort of correspondence of this to the distribution channel of the other sealing gasket, barring a specified correspondence).

As to claim 9, Brambilla et al. teach a fuel cell stack, wherein every other cell can be defined as a cooling cell (fig. 1). Each cooling cell has a perimetrical portion (gasket [6]) having a central hollow portion (housing for reticulated element [14]), side openings for the passage of cooling fluid (circular portion of [15]), fluid collection channel (straight portion of [15]), feed openings [13] for the passage of reactants, and discharge openings [12] for discharging reaction products and residual reactants, wherein reticulated element [5] sits in the central hollow portion [14]) (fig. 5).

As to claim 10, as seen in fig. 5, Brambilla et al.'s collection channel (straight portion of [15]) is located between the feed openings [13] and the hollow central portion [14].

As to claim 11, Brambilla et al.'s fuel cell is one of a filter-press arrangement (p 8, lines 4-5). It is noted that, although Brambilla et al. only show a gasket, it is stated that the components are juxtaposed in order to form the according manifolds, and thus the bipolar plates would have the same openings shown as the corresponding gasket (fig. 1, the perforated feed/discharge areas; p 8, lines 17-19). Accordingly, the fluid injection

holes (portion on the bipolar plate corresponding to straight portion of [15] in the gasket) are superposed with the fluid collection channel (straight portion of [15]) (fig. 5).

As to claim 12, Brambilla et al.'s cell can be interpreted such that triangular portion wherein parts [13] and [15] feed to constitute a side channel connecting a side opening (circular part of [15]) to the hollow central portion [14].

As to claim 14, it is noted that, although Brambilla et al. only show a gasket, it is stated that the components are juxtaposed in order to form the according manifolds, and thus the bipolar plates would have the same openings shown as the corresponding gasket (fig. 1, the perforated feed/discharge areas; p 8, lines 17-19). Accordingly, it can be said that a multiplicity of first calibrated holes exist (as seen by lower hole [13], wherein at least one would exist for each reactant (fig. 5)). Likewise, the upper holes [12] (one for each reactant) constitute a multiplicity of second calibrated holes for discharging the reaction products and optionally of residual reactants. It can be shown that the fluid injection calibrated holes (corresponding to the straight portion of [15]) are placed in correspondence to that of the first calibrated holes (lower holes [13]), barring specification of the correspondence (fig. 5).

As to claim 15, Brambilla et al.'s first calibrated holes (lower holes [13]) are aligned and placed in correspondence with the feed openings (as they the same part). Likewise the second calibrated holes (upper holes [12]) are aligned and placed in correspondence to the discharge openings. As indicated on the gasket of fig. 5, such openings are on the perimetrical portion of the plates (as the gaskets openings correspond to likewise ones of the bipolar plates).

As to claim 16, Brambilla et al. teach of a sealing gasket [6] that covers only a perimetrical portion of the bipolar plate [7], as central portion [14] is hollow and forms a housing for the reticulated element to reside (fig. 5).

As to claim 17, using a broad interpretation, Brambilla et al.'s teaching can be applied. The gasket [6] on either side in every other cell can be considered to be a cooling cell (with the intermediate cells being the reaction cells). For example purposes, gasket [6] of fig. 5 is focused on. Using this interpretation, since gasket [6] is a "cooling cell" as the fuel cell it belongs to is not interpreted to be a reaction cell. However, the cells on either side of it are interpreted to be "reaction cells" (see fig. 1, wherein only every other cell is a reaction cell). Gasket [6] is considered to be a cooling cell sandwiched between two reaction cells. The frame of the gasket is the rigid perimetric portion (as it has some degree of rigidity, especially when compressed within fuel cell stack), with a hollow center [14] (fig. 5). As seen in fig. 5, the gasket area separates the gaseous reactants (inlets at the lower holes [12], outlets at the upper holes [13]) from the central portion (portion defined by [14]). Additionally, the hollow center [14] serves as a housing for the reticulated element, which is conductive (page 8, lines 4-11).

As to claim 18, Brambilla et al.'s gasket has reactant feed openings (shown by lower holes [13]), reactant discharge openings (shown by upper holes [12]), as well as side openings for the passage of cooling fluid (circular portion of [15]).

As to claim 19, Brambilla et al.'s additional cell is a gasket, and so each face is covered by a gasket that defines a rigid perimetrical portion (as the claim does not preclude the gasket and the additional cell being one in the same). The sections

depicted by [13] feed into can be considered zones for collecting the reactants, wherein the zones are connected to the respective feed openings through a feed channel (as reactant is introduced) in correspondence to the inlets, as some reactant would gather in the areas around the inlets, but blocked off by the seal area. Likewise, portions depicted by holes [12] can be considered a collection zone placed in correspondence to the outlets (and thus discharge/outlet channels), as some discharge would gather in the areas around the outlets, but blocked off by the seal area. Note, it can be interpreted that there is a channel that connects the collection zone to the outlet, with the channel being the height of the gasket itself.

As to claim 20, Brambilla et al.'s gasket [6] is the additional cell. And the portions of seal portions around the reaction inlets/outlets [13/12] serve to hinder the leakage of reactant and reactant products from entering the central hollow portion, and thus hinders the passage of gaseous reactants and reaction products within the cell (fig. 5).

As to claim 21, Brambilla et al.'s fuel cell is one of a filter-press arrangement (p 8, lines 4-5). It is noted that, although Brambilla et al. only show a gasket, it is stated that the components are juxtaposed in order to form the according manifolds, and thus the bipolar plates would have the same openings shown as the corresponding gasket (fig. 1, the perforated feed/discharge areas; p 8, lines 17-19). Accordingly, the gasket portions shown (see fig. 5) correspond to the bipolar portions (of feed and discharge), wherein the gasket is superimposed on the bipolar plates, and thus the calibrated holes would correspond to those of the gasket, wherein the height of the gasket can be said to be for collecting the reactants/products.

As to claim 24, it can be seen that Brambilla et al.'s fluid collection channel (created by the gasket) is superposed to the calibrated holes (straight part of [15]) (fig. 5).

As to claim 27, Brambilla et al. teach that the cooling liquid is humidification water (p 8, lines 11-17).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. 1, 3, 5-12, 14-20, 22, 24, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0142201 (Nelson) in view of US 5482792 (Faita et al.).

As to claim 1, Nelson teaches a membrane electrochemical generator with a multiplicity of cells (fuel cell stack [10]), where gaseous reactants are fed into a fuel cell stack (para 0026, lines 1-7; fig. 1). Each fuel cell has an anode with a corresponding anode side (anodic chamber) and a cathode with a corresponding cathode side (cathodic chamber), wherein a proton exchange membrane is placed in between (para 0005; para 0031; fig. 1). Additionally, fig. 1 depicts one fuel cell [12] (reactive cell) that is broken out. It is noted that each fuel cell includes a membrane electrode assembly (MEA) [18], gaskets [42, 44], anode cooler plate [16], and cathode cooler plate [20]. The cooler plates [16, 20] serve as the conductive bipolar plates and are inherently conductive through the MEA portion [18], as is required for fuel cell function within a stack. Furthermore, it cooler plate shows a multiplicity of fluid injection calibrated holes

(water inlet ports [58a-d]) for water to be injected in some sort of manner (and thus imparting some sort of calibrated flow) (fig. 3).

It is noted that although the injection of flow of cooling fluid does not flow into the reaction cell, this is intended use for an apparatus claim, wherein the apparatus of Nelson et al. is the same as that of the instant application.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

As applied to the apparatus claims.

(For an alternate interpretation see "*" below.)

Nelson does not teach of a reticulated element that is a tridimensional network of wires that electrically connects the conductive bipolar plates to the electrodes while simultaneous distributing the gaseous reactants.

Faita et al. teach of a similar system with a MEA [6, 7] with a gaskets [8] and bipolar plates [1] on each side (fig. 1). Faita et al.'s system, however, further includes conductive reticulated element (collector [14]) disposed within the gasket, wherein the reticulated element the reticulated element is a tridimensional network of wires that electrically connect the bipolar plates to the electrode while simultaneously distributing gaseous reactants (note the reactants must pass through the collector [14] in order to contact the electrode) (col. 7, lines 20-27; figs. 1-4). The motivation for including a reticulated element disposed in a gasket area on both sides of the MEA, as taught by Faita et al. to provide (a) a multiplicity of contact points with the electrodes to minimize the energy dispersion related to excessively long transversal paths of electric current inside the electrodes, (b) low values of contact resistance with the surface of the bipolar plates, (c) heat transmission from the MEA to the bipolar plate, (d) a longitudinal flow of reactants with small pressure drop and uniform distribution on the whole surface of the electrodes due to large possibility of transversal mixing, (e) easy drain of liquid water formed by condensation inside the collector during operation, and (f) deformability with sufficient residual resiliency under compression to compensate unavoidable planarity defects of various components of the cells (col. 6, lines 57-67 to col. 7, lines 1-15). Therefore it would have been obvious to one having ordinary skill in the art at the time

the claimed invention was made to have incorporated the reticulated elements (current collector [14]) into the system of Nelson in order to provide the advantageous characteristics (a)-(f), as set forth above.

As to claim 3, Nelson shows that the fluid injection calibrated holes [58a-d] are mutually aligned to cathode intake (feed) opening [24] and anode intake (feed) opening [30] as well as coolant intake (feed) opening [34], wherein coolant opening [34] can interpreted to be a side opening in a perimetrical portion of cathode cooler plate [20] or anode cooler plate [16] (figs. 3 and 4).

As to claim 5, the combination of Nelson and Faita et al. obviates such a claim. Nelson's fuel cell stack has bipolar plate interposed between a pair of sealing gaskets, as demonstrated by coolant seal gasket [42] (anodic sealing gasket) and membrane gasket [44] (cathodic sealing gasket) (fig. 1). (Note: The membrane gasket [44] of fuel cell [12] and the coolant seal gasket [42] of fuel cell [14] (adjacent cells [12] and [14]) would surround the combined cathode cooler plate [20] of fuel cell [12].) The gaskets [42] and [44] form a hollow center portion, wherein the reticulated portion (the current collectors [14] of Faita et al.) would sit, as obviated above. Using gasket [42] (wherein the reticulated element of Faita et al. resides in) and comparing it to that of anode cooler plate [16] of fuel cell [12] as a visual example, it is seen that the feed openings of the reactants [30, 24, 26, 32], the coolant side openings [34, 36], and the distribution channels that are fluidly connected to the feed openings [38], and thus serve to fluidly connect to the reticulated element (obviated by Faita et al.) (fig. 1 of Nelson).

As to claims 6 and 7, Nelson teaches that cathode reactant surface [27] has a gasket group [76] that receives the membrane gasket [44] (para 0042). Therefore groove [76] is indicative of how gasket [44] fits onto the plate. As seen in fig. 4, there is a fluid collection channel (water channel [72]) connected to side opening [34] interposed between cathode and anode opening [24, 30] and the cathode channels [28a-d]. As water channel [72] delivers water from water intake [70] to the water inlet ports [58a-d], it collects cooling fluid (fig. 4; para 0041) (as applied to claims 6 and 7). Furthermore, it can be noted that the fluid connection channel [72] is connected to the distribution channels [28a-d], as it is placed next to the area where the distribution channels are (fig. 4) (as applied to claim 7).

As to claim 8, Nelson teaches that channel [72] is superposed on the fluid injection calibrated holes [58a-d] (compare to membrane gasket [44]) (figs. 1 and 4). There is some sort of correspondence of this to the distribution channels of the other sealing gasket, barring a specified correspondence (compare the superimposition of membrane gasket [44] to coolant seal gasket [42]). (Note: Absent clear definition, the assembly obviated by Nelson in combination with Faita et al. is considered to be filter-press, as a stack would be pressed together.)

As to claim 9, Nelson in combination with Faita et al. would obviate such a limitation. Nelson teaches a fuel cell stack, wherein every other cell can be defined as a "cooling cell." Therefore, in fig. 1, fuel cell [12] can be defined as a reaction cell, fuel cell [14] can be defined as an additional cell, and fuel cell [15] can be defined as a reaction cell, etc. (although only 3 cells are shown in the stack, a typical stack includes many

more) (para 0026). The cooling cell comprises a gasket [42, 44] (perimetrical portion having a central hollow portion). For example, taking the gasket groove [76] of fig. 4, it is indicated that there is an opening for the passage for the cooling fluid [34]. There is a fluid collection channel (groove corresponding to water channel [72]) connected to side opening [34] (fig. 4). Furthermore, that the gasket allows for feed openings for passage of gaseous reactants (cathode and anode inlet openings [24], [30]) and discharge openings for discharging reaction products and residual reactants (anode and cathode outlet openings [32], [26]) (fig. 4). (This is applying the features of exemplified fuel cell [12] to that of fuel cell [14].) It is noted that since every other fuel cell is being relied upon to be a cooling cell, Faita et al.'s conductive reticulated element (sitting in the hollowed portion of the gasket, as obviated in the rejection to claim 1) would be within these cells as well.

As to claim 10, Nelson's has fluid collection channel [72] placed between the feed openings [30, 4] and the central hollow portion (the part where the channels [28a-d] of the cooler plate [20] are).

As to claim 11, Nelson teaches the fluid collection channel (portion of gasket represented by the groove portion corresponding to channel [72]) is superposed on the fluid injection calibrated holes [58a-d] of the bipolar plate (cathode cooler plate [20]) (fig. 4). (Note: Absent clear definition, the assembly of Nelson combined with Faita et al. is considered to be filter-press, as a stack would be pressed together.)

As to claim 12, Nelson's gasket portion with the hollow center is fluidly connected with a side opening (coolant inlet [34]) via a side channel (water collection portion [72]) via the channels of the coolant plate [20].

As to claim 14, Nelson teaches a bipolar plate (as exemplified by cathode cooler plate [20]) with a multiplicity of first calibrated holes for the passage of reactants [68a-68d] and a multiplicity of second calibrated holes for the discharge of optional residual reactants [70a-d]. It can be shown that the fluid injection calibrated holes [58a-d] are placed in correspondence to that of the first calibrated holes [68a-d].

As to claim 15, Nelson's invention has first calibrated holes [68a-d] mutually aligned and placed in some sort of correspondence to feed openings [24, 30] of the bipolar plate (cathode cooler plate [20]) (fig. 4). Accordingly, second calibrated holes [70a-d] are placed in some correspondence to discharge openings [26, 32], which are placed on a perimetrical portion of conductive plate [20] (fig. 4). (Note: In another interpretation, the bipolar plate can comprise of the combination of the cathode cooler plate [20] and anode cooler plate [16], which is not shown. However it is mentioned that it is the mirror image to that of the cathode plate (para 0043).)

As to claim 16, Nelson's stack has a sealing gasket (membrane gasket [44]) that is seen to cover only one face of the bipolar plate (cathode cooler plate [20]), wherein the gasket [44] has a central hollow portion for conductive reticulated element (the inclusion of Faita et al.'s collector [14], as obviated within the rejection to claim 1).

As to claim 17, using a broad interpretation, Nelson's teaching can be applied. Either gasket [42, 44] of the cooler plates in every other cell can be considered to be a

cooling cell (with the intermediate cells being the reaction cells). For example purposes, membrane gasket [44] is focused on. Using this interpretation, since membrane gasket [44] is a "cooling cell" as the fuel cell it belongs to is not interpreted to be a reaction cell. However, the cells on either side of it are interpreted to be "reaction cells." Using fig. 1, the cell to the right of fuel cell [12] (not shown) is a reaction cell, as is fuel cell [14]. Fuel cell [12] is not interpreted to be a reaction cell, however membrane gasket [44] is considered to be a cooling cell sandwiched between two reaction cells. The frame of the gasket is the rigid perimetric portion (as it has some degree of rigidity, especially when compressed within fuel cell stack), with a hollow center (fig. 1). (For a better view of the shape of the gasket, please refer to fig. 4, item [76]. Item [76] is a groove for the gasket, and so the gasket's shape is as shown.) As seen in fig. 4, the gasket area separates the gaseous reactants (fuel inlet [30], fuel outlet [32], oxidant inlet [24] and oxidant outlet [26]) from the central portion (portion defined by the channels [28]). Recall that the combination of Faita et al. with Nelson yields the structure, wherein the hollow center (of the gasket of Nelson) has a conductive reticulated element residing on it (the current collector [14] of Faita et al.) (as obviated in the rejection to claim 1).

As to claim 18, Nelson's gasket (as embodied by the shape of the gasket groove [76] for clarity's sake) has reactant feed openings [30, 24], reactant discharge openings [26, 32], as well as side openings for the passage of cooling fluid [34, 36].

As to claim 19, Nelson et al.'s additional cell is a gasket, and so each face is covered by a gasket that defines a rigid perimetrical portion (as the claim does not preclude the gasket and the additional cell being one in the same). The sections that

separate the reactant inlets [30, 24] can be considered a zone for collecting the reactants, wherein the zones are connected to the respective feed openings through a feed channel (as reactant is introduced) in correspondence to the inlets, as some reactant would gather in the areas around the inlets, but blocked off by the seal area. Likewise, the sections that separate the reactant outlets [26, 32] can be considered a collection zone placed in correspondence to the outlets (and thus discharge/outlet channels), as some discharge would gather in the areas around the outlets, but blocked off by the seal area. Note, it can be interpreted that there is a channel that connects the collection zone to the outlet, with the channel being the height of the gasket itself.

As to claim 20, Nelson's gasket [44] is the additional cell. And the portions of seal portions around the reaction inlets/outlets [30/24, 26/32] serve to hinder the leakage of reactant and reactant products from entering the central hollow portion, and thus hinders the passage of gaseous reactants and reaction products within the cell.

As to claim 22, Nelson teaches that fluid injection calibrated holes [58a-d] are placed between first calibrated holes [68a-d] (fig. 4). The gasket (defined by gasket groove [76] in fig. 4) defines a fluid collection channel, wherein some portion is below the feed openings [30, 24]. The channel is defined by the height of the height of the gasket.

As to claim 24, it can be seen that Nelson's fluid collection channel (created by the gasket, its represented structure filling that of gasket groove [76]) is superposed to the calibrated holes [58a-d].

As to claim 27, Nelson teaches that the coolant is a mixture of gas and liquid water (abs).

10. *Alternately, claims 1, 3, 5-12, 14-20, 22, 24, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson in view of US 5998054 (Jones et al.) and Faita et al.

As to claim 1, Nelson teaches a membrane electrochemical generator with a multiplicity of cells (fuel cell stack [10]), where gaseous reactants are fed into a fuel cell stack (para 0026, lines 1-7; fig. 1). Each fuel cell has an anode with a corresponding anode side (anodic chamber) and a cathode with a corresponding cathode side (cathodic chamber), wherein a proton exchange membrane is placed in between (para 0005; para 0031; fig. 1). Additionally, fig. 1 depicts one fuel cell [12] (reactive cell) that is broken out. It is noted that each fuel cell includes a membrane electrode assembly (MEA) [18], gaskets [42, 44], anode cooler plate [16], and cathode cooler plate [20]. The cooler plates [16, 20] serve as the conductive bipolar plates and are inherently conductive through the MEA portion [18], as is required for fuel cell function within a stack. Furthermore, it cooler plate shows a multiplicity of fluid injection calibrated holes (water inlet ports [58a-d]) for water to be injected in some sort of manner (and thus imparting some sort of calibrated flow) (fig. 3).

In this alternate interpretation, it can be said that Nelson does not teach specifically teach of injecting water (cooling fluid) into the reaction cells.

However, Jones et al. teach of metering water into the reactants (and thus the reaction cell) in order to advantageously and properly humidify the reactants. Therefore

the motivation for operating the fuel cell of Nelson in the opposite manner as taught would be to make sure that the reactants are properly humidified. Therefore one of ordinary skill in the art at the time the invention was made would have found it obvious to use the structure of Nelson in such a way to promote proper humidification of the cell (i.e. inject cooling fluid (water) into the reaction cell).

Nelson does not teach of a reticulated element that is a tridimensional network of wires that electrically connects the conductive bipolar plates to the electrodes while simultaneous distributing the gaseous reactants.

Faita et al. teach of a similar system with a MEA [6, 7] with a gaskets [8] and bipolar plates [1] on each side (fig. 1). Faita et al.'s system, however, further includes conductive reticulated element (collector [14]) disposed within the gasket, wherein the reticulated element the reticulated element is a tridimensional network of wires that electrically connect the bipolar plates to the electrode while simultaneously distributing gaseous reactants (note the reactants must pass through the collector [14] in order to contact the electrode) (col. 7, lines 20-27; figs. 1-4). The motivation for including a reticulated element disposed in a gasket area on both sides of the MEA, as taught by Faita et al. to provide (a) a multiplicity of contact points with the electrodes to minimize the energy dispersion related to excessively long transversal paths of electric current inside the electrodes, (b) low values of contact resistance with the surface of the bipolar plates, (c) heat transmission from the MEA to the bipolar plate, (d) a longitudinal flow of reactants with small pressure drop and uniform distribution on the whole surface of the electrodes due to large possibility of transversal mixing, (e) easy drain of liquid water

formed by condensation inside the collector during operation, and (f) deformability with sufficient residual resiliency under compression to compensate unavoidable planarity defects of various components of the cells (col. 6, lines 57-67 to col. 7, lines 1-15). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to have incorporated the reticulated elements (current collector [14]) into the system of Nelson in order to provide the advantageous characteristics (a)-(f), as set forth above.

As to claim 3, Nelson shows that the fluid injection calibrated holes [58a-d] are mutually aligned to cathode intake (feed) opening [24] and anode intake (feed) opening [30] as well as coolant intake (feed) opening [34], wherein coolant opening [34] can interpreted to be a side opening in a perimetrical portion of cathode cooler plate [20] or anode cooler plate [16] (figs. 3 and 4).

As to claim 5, the combination of Nelson and Faita et al. obviates such a claim. Nelson's fuel cell stack has bipolar plate interposed between a pair of sealing gaskets, as demonstrated by coolant seal gasket [42] (anodic sealing gasket) and membrane gasket [44] (cathodic sealing gasket) (fig. 1). (Note: The membrane gasket [44] of fuel cell [12] and the coolant seal gasket [42] of fuel cell [14] (adjacent cells [12] and [14]) would surround the combined cathode cooler plate [20] of fuel cell [12].) The gaskets [42] and [44] form a hollow center portion, wherein the reticulated portion (the current collectors [14] of Faita et al.) would sit, as obviated above. Using gasket [42] (wherein the reticulated element of Faita et al. resides in) and comparing it to that of anode cooler plate [16] of fuel cell [12] as a visual example, it is seen that the feed openings of the

reactants [30, 24, 26, 32], the coolant side openings [34, 36], and the distribution channels that are fluidly connected to the feed openings [38], and thus serve to fluidly connect to the reticulated element (obviated by Faita et al.) (fig. 1 of Nelson).

As to claims 6 and 7, Nelson teaches that cathode reactant surface [27] has a gasket group [76] that receives the membrane gasket [44] (para 0042). Therefore groove [76] is indicative of how gasket [44] fits onto the plate. As seen in fig. 4, there is a fluid collection channel (water channel [72]) connected to side opening [34] interposed between cathode and anode opening [24, 30] and the cathode channels [28a-d]. As water channel [72] delivers water from water intake [70] to the water inlet ports [58a-d], it collects cooling fluid (fig. 4; para 0041) (as applied to claims 6 and 7). Furthermore, it can be noted that the fluid connection channel [72] is connected to the distribution channels [28a-d], as it is placed next to the area where the distribution channels are (fig. 4) (as applied to claim 7).

As to claim 8, Nelson teaches that channel [72] is superposed on the fluid injection calibrated holes [58a-d] (compare to membrane gasket [44]) (figs. 1 and 4). There is some sort of correspondence of this to the distribution channels of the other sealing gasket, barring a specified correspondence (compare the superimposition of membrane gasket [44] to coolant seal gasket [42]). (Note: Absent clear definition, the assembly obviated by Nelson in combination with Faita et al. is considered to be filter-press, as a stack would be pressed together.)

As to claim 9, Nelson in combination with Faita et al. would obviate such a limitation. Nelson teaches a fuel cell stack, wherein every other cell can be defined as a

"cooling cell." Therefore, in fig. 1, fuel cell [12] can be defined as a reaction cell, fuel cell [14] can be defined as an additional cell, and fuel cell [15] can be defined as a reaction cell, etc. (although only 3 cells are shown in the stack, a typical stack includes many more) (para 0026). The cooling cell comprises a gasket [42, 44] (perimetrical portion having a central hollow portion). For example, taking the gasket groove [76] of fig. 4, it is indicated that there is an opening for the passage for the cooling fluid [34]. There is a fluid collection channel (groove corresponding to water channel [72]) connected to side opening [34] (fig. 4). Furthermore, that the gasket allows for feed openings for passage of gaseous reactants (cathode and anode inlet openings [24], [30]) and discharge openings for discharging reaction products and residual reactants (anode and cathode outlet openings [32], [26]) (fig. 4). (This is applying the features of exemplified fuel cell [12] to that of fuel cell [14].) It is noted that since every other fuel cell is being relied upon to be a cooling cell, Faita et al.'s conductive reticulated element (sitting in the hollowed portion of the gasket, as obviated in the rejection to claim 1) would be within these cells as well.

As to claim 10, Nelson's has fluid collection channel [72] placed between the feed openings [30, 4] and the central hollow portion (the part where the channels [28a-d] of the cooler plate [20] are).

As to claim 11, Nelson teaches the fluid collection channel (portion of gasket represented by the groove portion corresponding to channel [72]) is superposed on the fluid injection calibrated holes [58a-d] of the bipolar plate (cathode cooler plate [20]) (fig.

4). (Note: Absent clear definition, the assembly of Nelson combined with Faita et al. is considered to be filter-press, as a stack would be pressed together.)

As to claim 12, Nelson's gasket portion with the hollow center is fluidly connected with a side opening (coolant inlet [34]) via a side channel (water collection portion [72]) via the channels of the coolant plate [20].

As to claim 14, Nelson teaches a bipolar plate (as exemplified by cathode cooler plate [20]) with a multiplicity of first calibrated holes for the passage of reactants [68a-68d] and a multiplicity of second calibrated holes for the discharge of optional residual reactants [70a-d]. It can be shown that the fluid injection calibrated holes [58a-d] are placed in correspondence to that of the first calibrated holes [68a-d].

As to claim 15, Nelson's invention has first calibrated holes [68a-d] mutually aligned and placed in some sort of correspondence to feed openings [24, 30] of the bipolar plate (cathode cooler plate [20]) (fig. 4). Accordingly, second calibrated holes [70a-d] are placed in some correspondence to discharge openings [26, 32], which are placed on a perimetrical portion of conductive plate [20] (fig. 4). (Note: In another interpretation, the bipolar plate can comprise of the combination of the cathode cooler plate [20] and anode cooler plate [16], which is not shown. However it is mentioned that it is the mirror image to that of the cathode plate (para 0043).)

As to claim 16, Nelson's stack has a sealing gasket (membrane gasket [44]) that is seen to cover only one face of the bipolar plate (cathode cooler plate [20]), wherein the gasket [44] has a central hollow portion for conductive reticulated element (the inclusion of Faita et al.'s collector [14], as obviated within the rejection to claim 1).

As to claim 17, using a broad interpretation, Nelson's teaching can be applied. Either gasket [42, 44] of the cooler plates in every other cell can be considered to be a cooling cell (with the intermediate cells being the reaction cells). For example purposes, membrane gasket [44] is focused on. Using this interpretation, since membrane gasket [44] is a "cooling cell" as the fuel cell it belongs to is not interpreted to be a reaction cell. However, the cells on either side of it are interpreted to be "reaction cells." Using fig. 1, the cell to the right of fuel cell [12] (not shown) is a reaction cell, as is fuel cell [14]. Fuel cell [12] is not interpreted to be a reaction cell, however membrane gasket [44] is considered to be a cooling cell sandwiched between two reaction cells. The frame of the gasket is the rigid perimetric portion (as it has some degree of rigidity, especially when compressed within fuel cell stack), with a hollow center (fig. 1). (For a better view of the shape of the gasket, please refer to fig. 4, item [76]. Item [76] is a groove for the gasket, and so the gasket's shape is as shown.) As seen in fig. 4, the gasket area separates the gaseous reactants (fuel inlet [30], fuel outlet [32], oxidant inlet [24] and oxidant outlet [26]) from the central portion (portion defined by the channels [28]). Recall that the combination of Faita et al. with Nelson yields the structure, wherein the hollow center (of the gasket of Nelson) has a conductive reticulated element residing on it (the current collector [14] of Faita et al.) (as obviated in the rejection to claim 1).

As to claim 18, Nelson's gasket (as embodied by the shape of the gasket groove [76] for clarity's sake) has reactant feed openings [30, 24], reactant discharge openings [26, 32], as well as side openings for the passage of cooling fluid [34, 36].

As to claim 19, Nelson et al.'s additional cell is a gasket, and so each face is covered by a gasket that defines a rigid perimetrical portion (as the claim does not preclude the gasket and the additional cell being one in the same). The sections that separate the reactant inlets [30, 24] can be considered a zone for collecting the reactants, wherein the zones are connected to the respective feed openings through a feed channel (as reactant is introduced) in correspondence to the inlets, as some reactant would gather in the areas around the inlets, but blocked off by the seal area. Likewise, the sections that separate the reactant outlets [26, 32] can be considered a collection zone placed in correspondence to the outlets (and thus discharge/outlet channels), as some discharge would gather in the areas around the outlets, but blocked off by the seal area. Note, it can be interpreted that there is a channel that connects the collection zone to the outlet, with the channel being the height of the gasket itself.

As to claim 20, Nelson's gasket [44] is the additional cell. And the portions of seal portions around the reaction inlets/outlets [30/24, 26/32] serve to hinder the leakage of reactant and reactant products from entering the central hollow portion, and thus hinders the passage of gaseous reactants and reaction products within the cell.

As to claim 22, Nelson teaches that fluid injection calibrated holes [58a-d] are placed between first calibrated holes [68a-d] (fig. 4). The gasket (defined by gasket groove [76] in fig. 4) defines a fluid collection channel, wherein some portion is below the feed openings [30, 24]. The channel is defined by the height of the height of the gasket.

As to claim 24, it can be seen that the fluid collection channel (created by the gasket, its represented structure filling that of gasket groove [76]) is superposed to the calibrated holes [58a-d].

As to claim 27, Nelson teaches that the coolant is a mixture of gas and liquid water (abs).

11. Claims 1, 2, 4, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Faita et al.

As to claim 1, Jones et al. teaches an electrochemical generator (fuel cell assembly [100]), wherein the working section [114] made up of many layers [118] that form fluid manifolds for supplying fluids to and removing fluids from the working section, where each layer forms a working cell (the exemplified multiplicity of cells provided being 108) (col. 4, lines 65-67; col. 5, lines 1-10; fig. 1). It is noted that fuel cell is a PEM-type fuel cell with a cathode (cathodic chamber) and an anode (anodic chamber) around a PEM (membrane) (col. 5, lines 10-20). (The cells must react with the reactants in order to provide the function of a fuel cell.) The cells have a fluid flow plate [120] made of conductive material, such as graphite and can be a **bipolar**, monopolar, anode cooler, or cathode cooler plate (col. 5, lines 32-40; fig. 2). Furthermore, liquid water is metered into each fluid flowplate inlet [126] through injection ports [131] (col. 6, lines 28-37; fig. 3). As liquid water is injected, it is considered that it is a cooling fluid that is injected inside the reaction cells [118]. (It is said that the injection ports [131] can be made circular with a diameter of 0.005 to 0.010 inches, thus imparting some calibration to the holes and some calibration to the flow with respect to the hole size.)

Jones et al. does not teach of a reticulated element that is a tridimensional network of wires that electrically connects the conductive bipolar plates to the electrodes while simultaneous distributing the gaseous reactants.

Faita et al. teach of a similar system with a MEA [6, 7] with bipolar plates [1] on each side (fig. 1). Faita et al.'s system, however, further includes conductive reticulated element (collector [14]) disposed within a gasket on either side of the membrane electrode assembly of the fuel cell, wherein the reticulated element is a tridimensional network of wires that electrically connect the bipolar plates to the electrode while simultaneously distributing gaseous reactants (note the reactants must pass through the collector [14] in order to contact the electrode) (col. 7, lines 20-27; figs. 1-4). The motivation for including a reticulated element disposed in a gasket area on both sides of the MEA, as taught by Faita et al. to provide (a) a multiplicity of contact points with the electrodes to minimize the energy dispersion related to excessively long transversal paths of electric current inside the electrodes, (b) low values of contact resistance with the surface of the bipolar plates, (c) heat transmission from the MEA to the bipolar plate, (d) a longitudinal flow of reactants with small pressure drop and uniform distribution on the whole surface of the electrodes due to large possibility of transversal mixing, (e) easy drain of liquid water formed by condensation inside the collector during operation, and (f) deformability with sufficient residual resiliency under compression to compensate unavoidable planarity defects of various components of the cells (col. 6, lines 57-67 to col. 7, lines 1-15). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to have incorporated the reticulated

elements (current collector [14]) into the system of Nelson in order to provide the advantageous characteristics (a)-(f), as set forth above.

As to claim 2, Jones et al.'s invention would inherently have some degree of evaporation, as the liquid water (cooling liquid) is injected and provides humidification and thermal management as it passes through the cell. (The reason for inherency is that the fuel cell runs at a certain temperature and thus by passing liquid water through it, some of it would evaporate to some degree, thus absorbing heat and removing heat generated in the reaction of the electrochemical generator.)

As to claim 4, Jones et al. teaches that the diameter of the injection ports [131] is circular with a diameter of 0.005 to 0.010 in., depending on such factors as desired water injection rates (col. 5, lines 64-66). Using the conversion that 1 in. = 25.4 mm, the range 0.005 to 0.010 in. is equivalent 0.127 mm to 0.254. Therefore for the range of 0.200 mm to 0.254 mm overlaps the range claimed by the instant application and thus obviates the claimed range.

As to claim 27, Jones et al. teaches that liquid water is injected into ports 131 (col. 6, lines 28-38), and thus it can be considered a cooling fluid.

Response to Arguments

12. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that the previous rejection of record has been withdrawn due to the amendments to the claims (further defining the reticulated element), thus changing the scope of the claims. However, both (a) a new piece (Brambilla et al.) and (b) a

secondary reference (Faita et al.) have been added to teach such claim features. It is specifically noted that Brambilla et al. is an anticipatory reference for many of the claims, as set forth within the rejection. Examiner would like to take the opportunity to address any pertinent arguments.

Applicant argues with respect to Nelson that the water injection ports in Nelson are fluidly sealed from the reaction cell, while the fluid injection calibrated holes are fluidly connected to the reaction cell. Applicant specifically points to para 0041 of Nelson.

Examiner respectfully disagrees with Applicant's position. Para 0041 does not necessarily state that the water injection ports are sealed. Additionally, the coolant is still at least indirectly entering the reaction cell as humidification provided to the air reactant (para 0044; fig. 5). Accordingly, it is submitted that the structure is still met (wherein the calibration holes exist to introduce coolant, wherein the coolant stream does enter the reaction cell, if indirectly). Furthermore, an alternate 103 rejection has been made (using Jones et al. as a secondary reference) to further obviate such a feature. Therefore, for the reasons set forth above, Applicant's arguments are not found to be persuasive, and the rejection of record is maintained.

With respect to the previous 102 rejections with respect Nelson, Horiguchi et al., and Jones et al., Applicant argues that the references do not teach of the currently claimed reticulated material (tridimensional network of metal wires).

Examiner would first like to note that with the perfection of priority, Horiguchi et al. no longer applies as prior art. Secondly, Examiner submits that Faita et al., as

pointed out by Applicant, is relied upon to obviate the use of such a reticulated element. Accordingly, Examiner submits that all the claimed limitations are still taught by the combinations set forth above in the rejections.

With respect to the combination of Nelson and Jones, Applicant argues that neither teach the reticulated element as currently claimed.

Examiner submits that Faita et al. is currently relied upon to obviate the use of such a reticulated element. Accordingly, Examiner submits that all the claimed limitations are still taught by the combinations set forth above in the rejections. It is also noted that Applicant does not argue how the combination is not proper. Therefore, the Examiner maintains the obviousness rejections and upholds the rejection as above.

Allowable Subject Matter

13. The indicated allowability of claim 21 is withdrawn in view of the newly discovered reference(s) to Brambilla et al. Rejections based on the newly cited reference(s) are set forth above in the rejection.

14. Claims 23, 25, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reasons for allowability with respect to claims 23, 25, and 26 have been set forth within the Final Office Action dated March 27, 2008 and are herein incorporated.

It is noted that although Brambilla et al. has been discovered, it still does not teach the claimed invention of claims 23, 25, and 26, wherein such analysis is set forth below.

Claim 23 teaches a generator comprising the elements therein. Notably, it teaches that there is a fluid collection channel located between said feed openings of said additional cell and said zone of collection of the gaseous reactants.

Brambilla et al.'s gasket can be seen in fig. 5. It is clear that there is no fluid collection channel located between the gasket, which is interpreted as the cooling cell, between the inlet openings [13] and the zone for collecting (interpreted as the gasketed portion superposing the inlet openings). As these two elements are back to back, there is no channel for collecting.

Claim 25 teaches a generator comprising the elements therein. Notably, it teaches that there is a first and a second fluid collection lateral channel connected to the side openings of the cooling cells and placed above said discharge openings of said cooling cells and that said cooling fluid, prior to reaching said fluid injection holes passes through the first and second fluid collection lateral channels to cross subsequently the whole surface of said respective electrically conductive reticulated element pre-heating counter-currently or concurrently with respect to at least one gaseous flow entering said reaction cells..

Brambilla et al.'s teaching can be seen in fig. 5. It is clear that no lateral channels exist. Even if they did, they would not impart the structure that allows cooling fluid to traverse the whole surface before reaching the fluid injection holes.

Claim 26 teaches a generator comprising the elements therein. Notably, it teaches a first and second fluid collection lateral channel connected said side openings of said of said cooling cells and placed above said discharge openings, a third and a

fourth fluid collection lateral channel connected to said side openings of said cooling cells and placed below said feed openings of said cooling cells, a fluid collection channel located between said feed openings of said cooling cells and said zone of collection of the gaseous reactants and connected to said side openings of said cooling cells, that said cooling fluid, prior to reaching said fluid injection holes enters through said first and second fluid collection lateral channel to subsequently cross the whole surface of said respective electrically conductive reticulated element pre-heating counter-currently or concurrently with respect to at least one gaseous flow entering said reaction cells, said cooling fluid subsequently exiting from said third and fourth fluid collection lateral channel, and that in a filter-press configuration said fluid collection channel is superposed to said fluid injection calibrated holes.

Nelson's teaching can be seen in fig. 5. It is clear that no lateral channels exist. Even if they did, they would not impart the structure that allows cooling fluid to traverse the whole surface before reaching the fluid injection holes. Furthermore, no fluid collection channel is interposed within the gasket [6], which is interpreted as the cooling cell, between the inlet openings [13] and the zone for collecting (interpreted as the gasketed portion superposing the inlet openings). As these two elements are back to back, there is no channel for collecting.

15. Claim 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is an Examiner's statement of reasons for allowance (with respect to claim 13): None of the prior art of record, alone or in combination appear to teach, suggest, or render obvious the invention of at least claim 13.

Claim 13 teaches a generator comprising the elements therein. Notably, it teaches that the cooling fluid traverses the cooling cell prior to crossing said fluid injection holes into the adjacent reaction cell, pre-heating counter-currently or concurrently with respect to at least one gaseous flow entering said reaction cell.

The combination of Nelson and Faita can be seen by looking at fig. 1 of both Nelson and Faita. The interpretation taken with respect to Nelson is that every other cell is a "cooling cell," wherein the coolant must enter the injection holes to act as a coolant for that particular cell. In such a manner the cooling fluid (a) enters only the cell that it is cooling and (b) is not injected into an adjacent cell. Similarly, Brambilla et al. was applied using a similar interpretation, wherein the cooling fluid only enters the cell that is cooling and is not injected into an adjacent cell. Neither Brambilla et al. nor Nelson in view of Faita et al. teaches of pre-heating with respect to one of the gaseous flows (reactants) entering the reaction cell. Additionally, there would be no motivation for making the coolant behave in such a manner, as each cell is provided with its own coolant. Therefore none of the prior art alone or in combination appear to teach, suggest, or render obvious the invention of claim 13.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUGENIA WANG whose telephone number is (571)272-4942. The examiner can normally be reached on 7 - 4:30 Mon. - Thurs., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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